AMENDMENTS TO THE SPECIFICATION

Please replace pages 1-43 of the enclosed English translation with the Substitute Specification enclosed with this Preliminary Amendment. This Substitute Specification numbers the paragraphs in accordance with USPTO practice and additionally contains the amendments reflected in the following paragraphs with markings:

CROSS-REFERENCE TO RELATED APPLICATIONS

[01] This is a National Stage of International Application PCT/EP2004/007926 filed July 15, 2004 and claiming benefit of US Provisional Applications Nos. 60/487,709 and 60/487,708, both filed July 16, 2003, and 60/548,123 filed February 2004.

[02] The present invention relates to an illumination system for a microlithographic projection exposure apparatus. Such apparatuses are used for the manufacture of highly integrated electrical circuits and other microstructured ~~deeives~~devices.

[04] An illumination system known from US 6 285 443 A includes a laser serving as the light source, a beam-forming system, a zoom-axicon objective for adjusting various types of illumination, together with a light mixing rod with which the projection light generated by the laser is mixed and

~~homogenised~~homogenized. Arranged behind the light mixing rod in the light propagation direction is a masking system for defining the geometry of the light field passing through the reticle.

[07] Because high scanning velocities occur in modern projection exposure apparatuses with a view to high throughput, the blades displaceable in the scanning direction are subjected to high dynamic loading. The mechanism in the masking systems required for this displacement is therefore constructionally relatively complex and expensive to manufacture, and requires, in addition, relatively large installation space inside the illumination system. The arrangement of other, ~~neighbouring~~neighboring optical elements can therefore be difficult.

[19] The illumination system according to the invention can be ~~realised~~realized especially simply if the first objective images a first optical raster element, arranged before the first objective in the beam propagation direction, on the first field plane, and if the illumination system also has a second objective arranged behind the first objective in the beam propagation direction, which second objective images the first field plane on the second field plane. The first optical raster element may be, for example, a refractive element, e.g. of the type of a microlens array, a diffractive element (grating), a kinoform or a hologram. With such an optical raster element,

known as such, the light distribution of the projection light beam emitted by the light source can be shaped to have a circular, annular or quadrupole divergence distribution.

[35] With the known attenuation system there is the further difficulty that, when the blades are moved very far into the light field, the times during which a given point on the moving reticle (and therefore on the wafer) is exposed to projection light can become so short that pulse ~~quantisation~~quantization effects become noticeable. These effects are connected to the fact that lasers used as light sources are operated in a pulsed mode. If the time window for an exposure is very short it can make a considerable difference for the light quantity whether, for example, 6 or only 5 light pulses impinge on the point concerned. With the transmission filter according to the invention such pulse ~~quantisation~~quantization effects cannot occur.

Fig. 1 shows a meridional section of an illumination system according to the invention in a highly ~~schematised~~schematized representation which is not to scale;

Fig. 11 shows a meridional section of an illumination system according to another aspect of the invention in a highly ~~schematised~~schematized representation which is not to scale.

[50] It is not absolutely necessary for the first optical masking system 38 to be arranged exactly in the first field plane 36; it may also be offset from the field plane 36 by a few ~~millimetres~~millimeters up to a maximum of approximately 2 cm along the optical axis denoted by 41, because a blurred imaging of the first blades 40 in scanning operation not relevant in view of the integration effect in the scanning direction which is achieved in that mode.

[63] The attenuation system 160 includes a transmission filter 162 with locally varying transmissivity, and a third traversing system 164. By means of the latter the transmission filter 162 can be moved in a filter plane 163 synchronously with the traversing movements of the reticle 30 and therefore with the traversing movements of the support 126 during a scanning operation. For this purpose the third traversing system 164 is connected via a control line 167 to the control system 130, which ~~synchronises~~synchronizes the traversing movements of the first, second and third traversing systems 118, 128 and 164 respectively. The third traversing system 164 may in principle

be constructed identically to the first and second traversing systems 118, 128.

[83] If so desired, a glass rod (not shown) or a similar light mixing element for beam ~~homogenisation~~homogenization may be inserted between the third objective 234 and the mask system 238.

[84] The second objective 228 may moreover be integrated, with only minor design modifications, into the illumination system known from the above-mentioned US 6 285 443 A if the glass rod is omitted. Omission of the glass rod is feasible if the projection exposure system is only intended for scan operation, for example, for which ~~homogenisation~~homogenization is unnecessary at least in the scan direction. The available space obtained in the illumination system by omitting the glass rod will then be taken up by the second objective 228 and the second optical raster element 230, which is spatially offset from the zoom-axicon objective 220.

Please delete the present Abstract of the Disclosure, set forth on page 44 of the English translation.

Please add the following new Abstract of the Disclosure:

An illumination system for a microlithographic projection exposure apparatus includes a light source for generating a projection light beam, a first objective and a masking system for masking a reticle. The masking system includes adjustable first blades for masking in a first direction and adjustable second blades for masking in a second direction. The first blades are arranged in the region of a first field plane and the second blades are arranged in the region of a second field plane which is different from the first field plane. The masking system can therefore be made spatially less concentrated, whereby constructional difficulties in the region of the field plane before the masking objective resulting from space requirement problems are reduced. A further contribution is made to solving the space requirement problem if an attenuation system for achieving the most uniform possible light intensity in the wafer plane includes a transmission filter which has locally varying transmissivity and can be moved synchronously with traversing movements of the reticle.